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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/28/2005

Moelle Christoph

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10/08/2008

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EXAMINER

XU, LING X

ART UNIT

PAPER NUMBER

1794

MAIL DATE

DELIVERY MODE

10/08/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/527,499	Applicant(s) CHRISTOPH ET AL.	
	Examiner Ling Xu	Art Unit 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 September 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-2, 4-13, 15-19 and 22-24 is/are pending in the application.
- 4a) Of the above claim(s) 11-13, 15-19, 22 and 23 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4-10 and 24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>3/11/05, 8/22/08 and 6/19/08</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group I, claims 1-2, 4-10 and 24 in the reply filed on 9/11/2008 is acknowledged. The traversal is on the ground(s) that the Examiner has focused on differences within the claims but has failed to consider the common features, namely the common inventive concept as required by PCT Rule 13.1. This is not found persuasive because, as stated in the prior Office action dated on 7/9/2008, the inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features the special technical feature of the present invention, a coated substrate comprising at least one functional layer of a metal and at least one intermediate layer of a metal oxide which interrupts the at least one functional layer and has a thickness that is less than or equal to 10nm, does not define a contribution over the prior art, as is revealed by Solberg et. al. (US 5,944,964), see col. 9, line 44 to col. 10, line 26. Consequently, a lack of unity of invention exists. See 37 CFR 1.475 and MPEP 1850.

Applicants also argue that searching elected Group I (the method claims) is likely to result in finding art pertinent to non-elected Group II (the product claims). Thus, it does not place a serious burden on the Examiner to search and examine the subject matter of the non-elected groups, along with elected Group I. This is also not found persuasive because a search of the method claims may overlap the search of the

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product claims. However, a search of the method claims does not include all the limitations recited in the product claims. Therefore, additional search and examination are required for the product claims. A serious burden does exist.

Claims 11-13, 15-19 and 22-23 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 9/11/2008.

The requirement is still deemed proper and is therefore made FINAL.

Specification

2. The disclosure is objected to because of the following informalities:

On page 4, line 25, applicants describe inventions by referring to “process as described in claims 1 to 10” and “coated substrate as described in claims 11-23.”

Since the scope of the claims and claim numbers may be changed during the process of patent prosecution (e.g. to include different limitations, to be deleted, or to be renumbered if allowed), it is recommended that the specification be revised to exclude any description of claimed invention by referring to claim numbers.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-2, 4-10 and 24 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

In claim 1, it is unclear how to make the intermediate layer sufficient to increase the transmittance and/or reflectance of the functional layer. It is also unclear how much is considered "sufficient." The subject matter is not described in the specification in such a way to enable one skilled in the art to make and use the invention.

In claim 4, it appears that the process is using the same layer starting material in the repeating process of sputtering, interrupting, and continuing steps (according to both claims 1 and 4), accordingly, the functional layers each should comprise the same material from the same layer starting material. It is unclear how a plurality of functional layers can be formed with different refractive indexes. The subject matter is not described in the specification in such a way to enable one skilled in the art to make and use the invention.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-2, 4-10 and 24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, it states that the functional layer has a thickness of less than 20nm, it is unclear if it includes that the thickness is zero. Also in claim 1, it is unclear how much is considered "sufficient" to increase the transmittance and /or reflectance of the functional layer.

In claims 1 and 8, it is unclear if the first portion of the functional layer is considered a first functional layer since an intermediate layer is applied on the first portion of the functional layer and the first portion of the functional layer is separated from second portion of the functional layer. Similarly, it is also unclear if the second portion of the functional layer is considered a second functional layer since it is applied on the first intermediate layer and is separated from the first portion of the functional layer.

In claim 4, it appears that the process is using the same layer starting material in the repeating process of sputtering, interrupting, and continuing steps (according to both claims 1 and 4), accordingly, the functional layers each should comprise the same materials from the same layer starting material. It is unclear how the functional layer can be formed with different low refractive indexes.

In claim 24, it is unclear if the thickness of less than 10 nm includes that the thickness is zero.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Kawada (JP-58-147556, translation included) in view of Ando et al. (EP-0548972) and Bartolomei et al. (EP-0516436).

Kawada discloses a process of forming an aluminum film (see page 2 of the translation), which is interrupted several times and, during the interruption, thin films of different metal such as Cu or Cr having thickness below 0.02 microns (20nm) are deposited on the aluminum film (abstract). The aluminum thin film is formed by a vacuum vapor deposition or a sputtering method. The sputtering method is a method which is performed under vacuum and is evidenced by, for example, Ando or Bartolomei. Both references show that the sputtering method has to be performed under vacuum in order to form the metal and metal oxide layers. Both references are provided to show that the sputtering method is a method performed under vacuum.

A 35 U.S.C. 102 rejection over multiple references has been held to be proper when the extra references are cited to: (A) Prove the primary reference contains an “enabled disclosure;” (B) Explain the meaning of a term used in the primary reference; or (C) Show that a characteristic not disclosed in the reference is inherent (see MPEP 2131.01, *Multiple Reference 35 U.S.C. 102 Rejections*).

6. Claims 1, 4-5, 7, 9 and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Ando et al. (EP 0548972)

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Ando discloses a process of forming a first (functional) layer comprising tin and silicon or other elements such as zirconium and a second (intermediate) layer comprising a nitride, an oxynitride, or an oxide of metal such as titanium, zirconium, chromium with a thickness of 20-100A (2-10nm) (col. 4, lines 1-60 and col. 5, lines 1-60). The process comprises steps of providing a glass substrate and a metal target in a vacuum system and sputtering the metal target to form the first layer, the process is then switched (interrupted) to a different process step to form the intermediate layer. After the intermediate layer is formed, the process is switched back to the same process condition to form a third layer which is the same as the first layer. The metal target used for forming the first and third layer is a pure metal target and may comprise chromium (col. 4, lines 1-60).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

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not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 2, 8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ando et al., as applied to claims 1 and 7 above, and further in view of Bartolomei et al. (EP-0516436).

As stated above, Ando discloses the same process as recited in claims 1 and 7.

Ando does not disclose the use of microwave plasma into the vacuum chamber to oxidize the functional layer and the use of rotating drum to rotate the substrate as recited in claims 2, 8 and 10.

Bartolomei teaches a magnetron sputtering process for coating a substrate with a functional layer in a vacuum chamber, which housing a rotary drum (page 3, lines 30-55), wherein a substrate is provided by rotary drum to a metal target. The metal target is sputtered the metal on the substrate to form a metal film layer. The sputtering step is interrupted when the coated substrate is carried into a plasma region. An oxygen-rich microwave plasma is introduced into the vacuum chamber to oxidize the metal film to form a dielectric. The sequence can be repeated through rotation of the drum to build a dielectric film of a desired thickness and by providing additional sputter target-plasma generating devices, multilayer films of various materials can be applied to the substrate.

Bartolomei also teaches that the process is capable of achieving higher sputter rates (page 4, lines 50-55) and avoiding arcing at the target surface (page 2, lines 10-15).

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Therefore, it would have been obvious to one of ordinary skill in the art to use the process as taught by Bartolomei to form the Ando's functional and the intermediate layers in order to improve the sputtering process and achieve a higher sputter rate.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ling Xu whose telephone number is 571-272-7414. The examiner can normally be reached on 8:00 am- 4:30 pm, Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye can be reached on 571-272-3186. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Ling Xu
Primary Examiner
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/Ling Xu/

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Primary Examiner, Art Unit 1794

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October 1, 2008